

ABSTRACT OF THE DISCLOSURE

A dispersion management device utilizing a high order mode fiber, mode transformers, a trim fiber and a Raman pump configured to generate substantially complete dispersion and dispersion slope compensation for an attached optical span, without losses. The trim fiber is optimized for Raman amplification while completing the dispersion compensation of the high order mode fiber. The dispersion management device in one embodiment generates at least 5dB of overall amplification. In one embodiment the trim fiber is a non-zero dispersion shifted fiber, while in another embodiment it is a reverse dispersion fiber. In yet another embodiment the trim fiber is dispersion shifted fiber. In yet another embodiment the trim fiber is standard SMF. In an exemplary embodiment the Raman pump comprises multiple sources, each of which are independently controlled, thus allowing for the operation without a variable optical attenuator. The mode transformer in a preferred embodiment is a transverse mode transformer.